

HANSON, LINDA E.*, AMY L. HILL and LEE PANELLA, USDA-ARS, SBRU, 1701 Centre Avenue, Fort Collins, CO 80526. **Interaction of varying *Fusarium oxysporum* isolates with different sugarbeet lines.**

ABSTRACT

Fusarium oxysporum can cause a wilt or yellows, as well as a root rot of sugar beet. Isolates that cause yellows symptoms on sugar beet are classified as *F. oxysporum* f. sp. *betae* (FOB). While host resistance to FOB is available, growers have reported variable results when using resistant material in the field. Current research in our laboratory and previous research by others on variability in FOB demonstrated that isolates that are pathogenic on sugar beet can be highly variable. Recent DNA sequencing evidence indicates that FOB isolates are a polyphyletic group. This variability could be associated with different host interactions. To examine this, twenty sugar beet lines were tested for their response to different FOB isolates in a greenhouse screen. The FOB isolates used included isolates from the three major groups detected with gene sequence data. In addition, isolates that varied in virulence in initial screening on FC716, a Fort Collins germplasm used as a standard, and isolates from different geographic regions, were included in the tests. While some sugar beet lines showed fairly broad spectrum resistance or susceptibility, others varied in their response to the FOB isolates. All sugar beet lines showed some symptoms with at least two of the FOB isolates. Significant ($P \leq 0.05$) differences were found for several sugar beet lines in their responses to varying FOB isolates, with differences observed both between the three different genetic groups, and for isolates within the different genetic groups. Testing for the presence of the pathogen in the host root indicate potential differences in the rate of spread through the root between resistant and susceptible beets. This may indicate one type of resistance that could be active against FOB.